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Australia.

A REVIEW

OF

MINING OPERATIONS

IN THE

STATE OF SOUTH AUSTRALIA

DURING THE

HALF-YEAR ENDED JUNE 30th, 1910.



No. 12
**DO NOT REMOVE
FROM THIS ROOM**

ISSUED BY T. DUFFIELD, J.P., *Secretary for Mines,*

UNDER THE AUTHORITY OF THE

HONORABLE C. VAUGHAN, M.P.,

Minister of Mines.

DEPARTMENT OF GEOLOGICAL SCIENCES
UNIVERSITY OF TORONTO

R. E. E. ROGERS, GOVERNMENT PRINTER, NORTH TERRACE.

1910.

1950-1951
1952-1953
1954-1955
1956-1957
1958-1959
1960-1961

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Adelaide :

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1910.

Miners' Rights and Privileges thereunder.

A miner's right is obtainable at the Department of Mines, Adelaide, also at the issuing stations in the various mining districts, at a cost of 5s.

A miner's right is in force for one year from the date of issue, and may be renewed at any time during its currency for another term of one year on payment of 5s.

The holder of a miner's right is authorised to prospect on any mineral lands for any metal, mineral, coal, or oil, and to peg out (of the prescribed shape and dimensions) gold, mineral, coal, and oil claims, and also leases of a like nature.

AREAS AND WORKING CONDITIONS.

GOLD LEASES—Maximum area, 20 acres; working conditions, one man to every five acres.

MINERAL LEASES—40 acres; one man to every 10 acres.

MISCELLANEOUS LEASES—

Salt	640 acres; special conditions.
Gypsum	640 " one man to every 40 acres.
Mining Works.....	10 " one man.
COAL OR OIL LEASES	640 " one man to every 40 acres.
GOLD DREDGING LEASES	200 " special conditions.
MINERAL CLAIMS	40 "
GOLD CLAIMS.....	30ft. x 30ft., alluvial; 100ft. x 600ft., reef.

Gold claims must be constantly worked—one man for each claim—and mineral claimholders must employ two men for each claim. Amalgamation of either gold or mineral claims reduces the labor conditions by one-half.


Gold, mineral, coal, and oil leases are granted for a term of 42 years—the two former at a rental of 1s. per acre per annum and a royalty of 6d. in the pound on net profits, the latter at a rental of 6d. per acre per annum until coal or oil is found in payable quantities, when 1s. per acre is payable and a royalty of 6d. in the pound on the net profits.

The Minister may permit, for the concentration of labor, of the amalgamation of not more than four adjoining gold or mineral leases.

Any number of gold, mineral, coal, or oil leases may be held by one person.

Licences to search for twelve months for precious stones, mineral phosphates, oil, rare metals, minerals, and earths are issued on specific mineral lands, not exceeding five square miles in area for one person, a fee of 20s. being charged for each square mile or portion thereof. These licences give a preferential right to a lease over a portion of the area, as prescribed.

P R E F A C E .



The average price of standard copper, on which the mineral output of South Australia so largely depends, was £58 3s. 3d. for the past half-year, with the natural result that many of the mines in the outlying districts have been compelled to partially suspend operations until better market conditions prevail.

When this occurs a stimulus should be given to mining in the Far North by the completion of the smelters at Yudnamutana.

The late coal strike in New South Wales has drawn more particular attention to our own coal deposits, and it is proposed that a Parliamentary party and mining officials shall shortly visit the Leigh's Creek Coal Mine and also visit some of the other northern mining centres.

T. DUFFIELD,

Secretary for Mines.

August 18th, 1910.

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Mining Operations during the Half-year ended June 30th, 1910.

AREA AT PRESENT HELD UNDER MINING ACTS (JUNE 30TH, 1910).

Nature of Holding.	Number.	Area.
Mineral leases	284	14,730 acres
Gold leases	85	1,566 "
Gold dredging leases	2	77 "
Miscellaneous leases	40	6,925 "
Mineral claims	329	10,857 "
Occupation licences	211	105 "
Search licences	92	104,320 "
Coal and oil claims	24	14,124 "
Gold claims	3	7 "
Total holdings	1,070	152,711 acres

REGISTERED FROM JANUARY 1st, 1910, TO JUNE 30TH, 1910.

Mineral claims	53	1,569 acres
Gold leases	2	40 "
Mineral leases	2	80 "
Miners' rights	400	—
Search licences	80	90,880 "
Coal and oil claims	19	10,924 "
Gold claims	2	6 "
Total	558	103,499 acres

MEN EMPLOYED.

Estimated number of men employed in mining and mineral works, June 30th 1910 :—

Copper	4,050
Gold	920
Salt	470
Silver-lead	40
Other minerals	570
Total	6,050

REPORT ON BORING OPERATIONS.

(BY MR. A. W. MATTHEWS.)

During the half-year the boring operations have been confined to the Copper Hill Mine, Kadina, and No. 7 Bore, Wandilta Mine, Kadina; the total boring for the period being 1,226ft., and includes taking down and re-erecting plant three times, besides shifting plant from Copper Hill a distance of 12 miles.

PARTICULARS OF BORES.

No. 2 BORE, COPPER HILL.—Angle, 15ft. in 100ft.; depth, 516ft. After passing through the surface loam and limestone we entered sandstone, followed by kaolin and sandstone to a depth of 60ft. We then entered grey country, and continued in same to 82ft. This was followed by blue country; then kaolin and sandstone to 139ft. From 139ft. we had hard blue country to 200ft., then grey and blue country to 236ft. At 236ft. we had a 9in. leader of honeycombed quartz, showing a little mineral. This was followed by broken country showing a little pyrites, which continued to 244ft. From 244ft. to 405ft. we drilled in blue and grey country, with seams of hard quartzite and feldspar. At 405ft. we entered lode formation, and drilled in same 7ft. This formation showed a little sulphide and mundie. At 412ft. we entered quartzite, which continued to 429ft. This was followed by hard blue country, with bands of quartzite, which continued to 483ft. From 483ft. to 486ft. we drilled in lode formation, showing sulphide. From 486ft. to 516ft. quartzite and blue country. Boring was discontinued at this depth.

No. 3 BORE, COPPER HILL.—Angle, 17ft. 6in. in 100ft.; depth, 300ft. First 5ft. surface loam and clay, followed by kaolin, which continued to 70ft.; then 10ft. sandstone, followed by broken blue and grey country mixed with quartz veins to 121ft. We then had 10ft. sandstone. At 131ft. we entered calcite formation mixed with quartz veins, showing a little green carbonates, and drilled in same to 144ft. From 144ft. to 163ft. sandstone, then 9ft. of quartzite, showing a little sulphide. From 172ft. to 178ft. hard blue country. At 178ft. we entered hard quartzite and continued in same to 226ft. This quartzite showed a little pyrites. From 226ft. to 234ft. we drilled in lode formation showing a little sulphide. From 234ft. to 300ft. broken blue country with seams of calcite. Boring discontinued and the plant shifted back to the Wandilta lease.

No. 7 BORE, WANDILTA MINE.—Angle, 20ft. in 100ft.; present dept, 410ft. This bore was started near the boundary of the Wandilta and Cornwall leases with a view to testing the continuation of the various lodes worked in these properties. Boring was started on May 19th, 1910. First 10ft. surface loam and clay, followed by kaolin and sandstone to 236ft. From 236ft. to 238ft. we had 2ft. of lode showing sulphide, sample of which assayed 3 per cent. copper. From 238ft. to 253ft. kaolin and sandstone. Then blue country with calcite bands and seams of feldspar to 410ft. We are still continuing this bore.

The three bores put down on the Copper Hill lease proved the existence of the lode at depth. Values, unfortunately, were too low to be payable. No. 7 Bore on the Wandilta and Cornwall boundary has given very encouraging results, as up to the present it has proved the existence of one lode 2ft. wide assaying 3 per cent. copper. Seeing that this bore is fully 1,500ft. south of our present workings, it speaks well for the continuation of the lodes. All the plant is in good order and working well. The boring costs keep about the same. For the last 8,162ft. of boring the cost of diamonds per foot has been 1s. 7d., which is exceptionally low.

WANDILTA MINE.

REPORT BY MR. A. W. MATTHEWS.

All the work has been confined to erecting pumping plant and fixing pitwork, plunger, and draw lift to enable us to cope with the heavy influx of water. This work has now been completed, and is working splendidly. The plant consists of the following:—One 25 h.p. Cornish boiler; one 30 h.p. Lancashire boiler; one 5 by 4 by 5 Blake feed pump; one winding winch, 10in. cylinders; one set 50ft. poppet heads; one 60 h.p. Pollock and McNab horizontal engine, fitted with link motion and reversing gear, and carrying a 16ft. diameter flywheel; one pumping shaft, diameter 10in., length 12ft. 6in., carrying one pump wheel, weight 5 tons, and one disc wheel 3 tons; one 30ft. sweep rod complete, with balance bob, box, etc.; one 12in. plunger, and 12in. draw lift.

All the machinery is securely housed and in splendid working order. Blacksmith shop and office have been erected, and storeroom is in course of erection. Plats have been cut at the 60ft. level and cistern put in, also all pitwork necessary to carry pumps.

Sinking has been resumed, the shaft being now 127ft. At 68ft. we entered a large calcite lode formation which showed green and grey ore in bunches and veins. We sank in this for 50ft. At 108ft. the calcite showed grey ore and oxide, and from 108ft. to 110ft. we obtained some nice grey ore, oxide, and a little sulphide. I have sent two samples of same for assay, with the following results:—No. 1, copper pyrites, 1dwt. gold per ton, 22.4 per cent. copper. No. 2, copper pyrites, 5dwts. gold per ton, 10.2 per cent. copper. All the machinery is working well. The pump keeps the water at from six and a half to seven strokes per minute, working on the 8ft. stroke.

GENERAL NOTES.

COPPER.

The average price of standard copper for the six months ended June 30th, 1910, was £58 3s. 3d., this being the lowest average since 1902, and £8 2s. 8d. lower than the average for the past 10 years. These prices have considerably restricted operations in most of the old established mining centres, and have resulted in total suspension of work in many of the northern mining localities. In these parts the cost of carriage to smelters at a distance are prohibitive, and the want of a treatment plant in a central position in the North, to deal with the vast bodies of low-grade ore already exposed, was never more severely felt than at present, as no operations are being carried on at Blinman, and a start has not yet been made with the smelters erected on the Union Consolidated Co.'s leases at Yudnamutana.

WALLAROO AND MOONTA.—The returns for past half-year show that this company treated 12,978 tons from the Moonta Mines for a yield of 601 tons of copper valued at £33,055, this being 3.97 per cent. per ton, including the copper recovered by precipitation. At the Wallaroo Mines 28,016 tons were treated, which gave 968 tons of copper averaging 3.28 per cent., including precipitates. The production of sulphuric acid from these mines totals about 5,000 tons per annum, on an average.

UNION CONSOLIDATED COPPER MINES.—During the past half-year this company has performed a large amount of developmental work in connection with their various leases in the Yudnamutana district. The extreme cost of carriage prohibits the sending of ore to the railway line with copper at present prices. The company now have their smelter erected, and are in a position to take prompt

advantage of any favorable market developments. The Inspector of Mines reports that fully £20,000 has been judiciously spent on the property, which is at present employing about 50 men. To overcome the difficulties *re* carriage of ore from the railway to the mine it is proposed to lay down a railway line from Leigh's Creek if the Government can assist by supplying the necessary old rails and sleepers. The Hon. Minister of Mines, with a party of experts, proposes to visit the locality shortly and have full inquiries made as to the probable permanence of the mines.

With the price of copper ranging for a long period below £60 per ton work has in general only been sufficient to keep mines in working order. A limited amount of work has been done at Kapunda, Burra, Mutooroo, Ediacara, Rapid Bay, and Bundaleer, in some instances by parties of tributers.

GOLD MINING.

TARCOOLA BLOCKS GOLD MINING Co. report having treated 1,020 tons for a yield of 1,828ozs., valued at £4,570, bringing their total output, to June 30th, 1910, to 28,798 tons of ore treated for a yield of 41,383ozs.—equal to £125,515. This gives a return of £4 7s. per ton, which must be considered a very satisfactory result for such a large quantity of ore.

Fair parcels of ore have been sent from the Curdnatta and Tarcoola Perseverance. These are not large, but a return of over 20zs. per ton, if only from picked stone, would appear to warrant more vigorous mining.

The New Glenloth Battery and Mining Co. have put down a new main shaft to a depth of 108ft. at present. The mine has been under exemption and work in abeyance until this work is completed. The returns from the Lone Hand in this locality show an average of 12dwts. per ton.

NEW ALMA.—Work has been confined to treatment of the tailings by cyanide, which gave an average yield of 4dwts. per ton.

MOUNT GRAINGER.—A party has been working this mine on tribute. It is reported that a rich patch has been struck, but details are not yet to hand.

LUX.—Small parcels of ore have been treated at the Petersburg Cyanide Works for an average of 9dwts. 14grs. per ton.

GOLDEN BOOMERANG.—The ore from this mine has so large a percentage of arsenic that it cannot be successfully treated by battery. It is a smelting problem, and ore has been sent to Germany for treatment. Tenders have been called for sinking a new main shaft.

DELORAINÉ.—Situated on private property on sections 1548, 1602, and 2, in hundred of Para Wirra. This has been recently opened up. Three shafts have been sunk. No. 1, 31ft. deep, with a drive 21ft.; No. 2, 42ft., and No. 3, 27ft., with drives 20ft. and 7½ft. Sixty tons treated at Mount Torrens yielded 83ozs. 7dwts. 21grs. of gold; and since returns were received for past half-year it has been reported that very rich ore has been found, and the mine is opening very well. Work is being carried on vigorously, and a large yield for this half-year is confidently expected. The excellent results from this property should give an impetus to gold-mining in the Williamstown district and other freehold localities where auriferous ore is known to exist. So far 147½ tons treated have yielded gold to the value of £1,147, the average yield being worth £7 16s. per ton.

LADY ALICE.—This mine, which has lain idle for some years, will shortly be given a further trial. At time of going to press it is reported that a company has been floated, under the name of "Adela" Gold Mining Co., to work it together with the "Try Again" Mine, which adjoins it on the N., and some adjacent freehold land.

RADIUM HILL (CARNOTITE).

Since last reports the shaft on this property has been sunk to 130ft., where it is now in a large, strongly-defined reef. It is proposed to sink this to water level in the hope that other radium-producing substances than the carnotite may be found in that region. In connection with the ore from this locality it is of interest to find that it has been found to be the most effective radio-active material as yet tried in conjunction with the transmitters on wireless installations. No reports have yet been received of the trial shipments of the ore which were sent to Europe for treatment. The area over which these ores are likely to be obtainable appears to be considerable, as the reefs have been traced for several miles, and about 28 square miles have been secured by various syndicates under licence to search. It has recently been reported that an important use for these radio-active ores has been discovered and patented. It is claimed that by using a small percentage of them in conjunction with low-grade copper ores the precipitation of the copper is rapidly effected.

SALT.

The returns so far received show that 25,807 tons of salt have been obtained during the past half-year. This is somewhat less than was expected, but some yields are as yet unreported, and will be included in the operations for the whole year. The Commonwealth Company were unfortunate in having their buildings and offices destroyed by fire, and their operations were restricted in consequence.

APATITE (CALCIUM PHOSPHATE).

Attention has previously been drawn to the existence of corundum in large quantities near Mount Painter, and a recent report shows the existence of apatite in the same locality. This is associated with the corundum in massive crystalline mica rock, but as yet no large body has been located. A sample assayed at the School of Mines gave 41·8 per cent. of phosphoric acid, equal to 91·27 tricalcic phosphate; chlorine, 1·7 per cent.; oxide of iron and alumina, 6 per cent., and a trace of fluorine.

CHINA CLAY.

BISMARCK CHINA CLAY COMPANY.—This company, which holds mineral lease 2055 in the hundred of Black Rock Plain, reports having started the manufacture of gas fire blocks, and have recently delivered 10,000 to the S.A. Gas Company. It is claimed that these have not before been manufactured in Australasia.

OCHRE.

THE AUSTRALITE PAINT COMPANY have taken 37 tons of ochre from their mineral lease No. 2059, near Oodlawirra.

ECLIPSE OCHRE (Hundred of Willunga, mineral lease 1890).—In addition to the manufacture of tiles, this company has obtained 34 tons of ochre.

MOUNT SIENNA COMPANY.—No returns. The company has been under suspension and is now reported to be in liquidation, but is likely to carry on under another proprietary.

IRON PYRITES.

WHEAL ELLEN MINE.—During the past half-year 274 tons were treated at the mine battery, which yielded 66·15ozs. of bullion, valued at £208. A parcel consisting of 12 tons 12ewts. shipped to the Cockle Creek smelters gave 4·65ozs. of gold, 175ozs. silver, and 3·4 tons of lead, the value being £71 2s., which must be considered a very satisfactory result. The iron pyrites ore maintains its high percentage of sulphur, 49·5 per cent. being the yield from 603 tons sold to the acid makers. Developmental work is now being carried on at the 240ft. level, where a drive is being put in N. from the main shaft.

IRONSTONE FLUX.

THE BROKEN HILL PROPRIETARY COMPANY report that their output from the Iron Knob quarries to supply the Port Pirie Smelters was 20,610 tons, valued at £11,679. Except from this source, there has been but little flux mining during the past half-year.

LIMESTONE FLUX.

The returns for limestone flux show 9,200 tons having been produced, being somewhat below the half-yearly average.

GYPSUM.

The output of gypsum for use as artificial manure is given as 7,459 tons. The chief sources of supply are from the neighborhood of Lake Fowler, on Yorke's Peninsula.

MERCURY.

The occurrence of mercury has so far only been reported in one locality in South Australia, viz., in hundred of Myponga, about seven miles E. of Willunga. The Government Geologist reported in 1891 that small quantities of mercury were contained in the bedrock of the tunnels and the alluvial drift. This has recently been taken up under licence to search, but a recent examination by the Inspector of Mines, who had a number of samples assayed, gave no results beyond a trace of mercury, so far as the present developments have gone.

ACCIDENTS ON MINES.

A gratifying feature of the mining operations for the past half-year is the freedom from accidents. None, even of a minor character were reported, and the safety of mining employes is evidently closely studied under the present system of inspection.

TANAMI GOLDFIELD.

At time of publication of last review, access to the Tanami Goldfield was difficult except by the route from Sturt Creek to the N.W. The Government well-sinking party under Mr. Pearce has now partially opened up the route from Mucka, on the Victoria River, the longest dry stage being 40 miles. The Western Australian Government has also been successful in finding good wells on the road to Hall's Creek. Attempts to reach the field from the S. during the summer months have not been successful, but during the cooler portions of the year no particular difficulties are presented in a fair season, as is shown from the fact that the Exchange Tanami Syndicate's party, which had a disastrous experience in the summer months, on being reorganised crossed from Teatree Well to Tanami in 24 days. Progress has been retarded very largely owing to the lack of explosives and high cost of stores, but the introduction of camel teams has materially reduced the rate of

carriage. At last report 51 leases and claims had been applied for, and on 28 of these fair prospects had been found, whilst on three of them rich specimen stone has been discovered. A parcel of stone weighing 76lbs. sent to the Perth mint by the Hartshorn Syndicate was reported to return the owners £1,500. Gold has been proved to exist over a length of two and a quarter miles along the Tanami reef system. The warden estimates that £5,000 worth of gold has been obtained during the past 12 months. It must not be overlooked that this is purely from specimen stone, alluvial, and hand-dollied stone, which would show free gold, and is no test of the value of the large ore bodies which require mechanical and chemical treatment. The urgent need of a battery on the field is recognised by the Hon. Minister of Mines, who has given instructions for a suitable plant to be obtained if such is available in the Northern Territory. On reading the reports of a number of prospectors who have visited the locality, whilst there are some regrets that alluvial gold is not more plentiful, there are few dissentients from the opinion that time will prove it to be a valuable field so far as the reefs are concerned. The Government Geologist in his report expressed his opinion that the reefs would live to depth ; and in this connection it may be noted that a vein of gold-bearing stone was cut at 140ft. in the Government well, this being the deepest as yet sunk on the ground. For a field so isolated—at the time of its inception in one of the most inaccessible areas in Australia—with the disabilities it labored under at the start owing to a water supply which almost reached the vanishing point, and the impossibility of sending large parcels away for treatment, it must be granted that the field, which has not yet been a full year in existence as a goldfield, has, now the initial difficulties have been largely overcome, the prospect of a prosperous future.

Mr. L. C. E. Gee, who has been in charge of the field since its proclamation as a goldfield, will shortly return to Adelaide, and will be succeeded by Mr. T. J. Worgan, who has served in the Territory for some years past.

RETURN SHOWING QUANTITY AND VALUE OF METALS AND MINERALS FOR SOUTH AUSTRALIA AND NORTHERN TERRITORY EXPORTED DURING YEAR 1909.

	SOUTH AUSTRALIA.		NORTHERN TERRITORY.	
	Quantity.	Value.	Quantity.	Value.
		£		£
Gold—Bullion, bar, ingot, &c.	—	—	583ozs.	1,997
Gold ores and concentrates	48cwt.	120	—	—
Copper—Ingot	102,432 “	307,094	—	—
Copper ore and concentrates.....	67 “	140	860cwt.	315
Copper waste	—	—	735 “	1,025
Tin ores and concentrates.....	2,777 “	11,000	8,769 “	32,668
Zinc, spelter, ore, and concentrates....	105 “	63	—	—
Wolfram	—	—	111 “	410
Iron ore	92 “	2	—	—
Ores, clays, and minerals, N.E.I.	345 “	331	—	—
Total	—	£318,750	—	£36,415

COPPER.

AVERAGE MONTHLY PRICE OF COPPER, JANUARY TO JUNE, 1910.

	Standard.			Best Selected.		
	£	s.	d.	£	s.	d.
January	61	1	0	64	13	2
February	59	10	7	63	6	3
March	59	7	2	62	19	5
April	57	5	0	61	10	7
May	56	7	0	60	2	9
June	55	9	0	60	2	0
Average for the six months	58	3	3	62	2	4

RANGE OF PRICES—

Highest, January 1st	61	17	6
Lowest, June 17th	54	5	0

AVERAGE PRICE OF STANDARD COPPER FOR THE LAST TEN YEARS.

	£	s.	d.		£	s.	d.
1900	73	2	5	1905	64	16	10
1901	66	19	1	1906	87	8	10
1902	52	8	3	1907	82	1	11
1903	58	3	2	1908	60	0	10
1904	59	0	7	1909	58	17	2

Average for the 10 years, £66 5s. 11d.

CRUSHING AND CYANIDING PLANTS.

RETURNS FROM GOVERNMENT CRUSHING AND CYANIDING PLANTS
FOR THE HALF-YEAR ENDED JUNE 30TH, 1910.

Name of Mine.	Locality.	Ore Treated.	Gold Recovered.	Value of Gold.	Yield per Ton, in Shillings.
		Tons cwt. qrs.	Ozs. dwts. grs.	£ s. d.	
MOUNT TORRENS GOVERNMENT BATTERY AND CYANIDE WORKS.					
Mount Torrens	Mount Torrens....	30 0 0	0 18 18	3 15 0	2/-
Florence Thelma....	Mount Torrens....	5 13 0	1 6 16	4 15 8	15
Crown lands	Blumberg	8 0 0	1 14 7	6 15 1	17/-
Florence Thelma....	Mount Torrens....	12 5 0	1 14 16	6 12 7	11
Deloraine	Kersbrook	60 12 0	83 7 21	334 10 6	110/-
Total		116 10 0	89 2 6	356 8 10	—
Grand total since starting of battery ..		9,402 1 1	5,386 1 2	20,353 10 1	43/-

RETURNS FROM GOVERNMENT CRUSHING AND CYANIDING PLANTS—continued.

Name of Mine.	Locality.	Ore Treated.	Gold Recovered.	Value of Gold.	Yield per Ton, in Shillings.
		Tons cwt. qrs.	Ozs. dwts. grs.	£ s. d.	
PETERSBURG GOVERNMENT BATTERY AND CYANIDE WORKS.					
Mount Grainger	Mount Grainger ..	11 15 0	3 16 12	14 1 11	24/-
Copperlinka	Olary	4 15 0	8 0 13	30 16 3	130/-
Lux	Olary	11 0 0	9 4 6	33 0 3	60/-
Homeward Bound ..	Mannahill	7 5 0	2 0 8	7 11 2	21/-
Lux	Olary	26 0 0	8 4 13	31 1 1	23/-
Dustholes	Mount Grainger ..	6 0 0	0 15 3	2 14 10	9/-
Total		66 15 0	32 1 7	119 5 6	—
Grand total since starting of battery ..		4,011 14 1	3,754 3 21	13,939 7 9	69/-

The Mount Torrens and Petersburg Government Battery and Cyanide Works are worked alternate months by the one staff. A summary of the work done for the year ending June 30th, 1910, shows that 46 parcels have been treated, comprising 996 tons 17cwts. 3qrs. of ore, tailings, and concentrates, the gold resulting, viz., 308ozs. 3dwts. 1gr., being worth £1,164 5s. 2d. Of this amount £949 3s. 9d. has been returned to the prospectors as proceeds on the various parcels. In addition to the foregoing, 403 assays and amalgamation tests have been made of small parcels of a few pounds weight and of ore, &c., under treatment.

TARCOOLA GOVERNMENT BATTERY.

No. of Parcel.	Name of Mine.	Ore Treated.	Gold Recovered.	Value of Gold.	Yield per Ton in Shillings.
		Tons cwt. qrs.	Ozs. dwts. grs.	£ s. d.	
146	Tarcoola Associated	4 15 0	2 14 0	9 0 2	38/-
147	Tarcoola Perseverance	28 10 0	82 6 5	317 8 9	223/-
148	Tarcoola Perseverance	25 0 0	11 5 13	42 8 7	34/-
149	Government Mine	5 10 0	1 14 18	5 16 10	21/-
150	Government Mine	20 0 0	9 9 15	31 19 11	32/-
151	Curdnatta	68 0 0	145 8 18	562 0 7	165/-
152	Government Mine	4 0 0	3 14 22	12 0 0	60/-
153	Curdnatta	5 0 0	3 13 12	12 5 3	49/-
Total		160 15 0	460 7 17	993 0 0	—
Total since starting of battery		2,244 0 0	2,913 9 1	10,301 15 11	91/-

GLENLOTH GOVERNMENT BATTERY.

51	Lone Hand	50 0 0	28 0 9	98 11 11	39/-
52	Royal Tiger	29 0 0	18 2 14	65 5 3	45/-
53	Royal Tiger	7 0 0	2 17 3	9 12 9	27/-
54	Fabian's No. 3	10 0 0	57 12 6	129 0 8	258/-
55	Lone Hand	10 0 0	8 0 0	28 11 9	57/-
56	Lake View	4 0 0	5 6 8	19 2 7	96/-
Total		110 0 0	99 18 16	350 4 11	—
Total since starting of battery		1,698 0 0	1,774 18 18	5,972 6 4	70/-

**TOTAL BATTERY AND CYANIDE RETURNS FROM ALL PLANTS
FOR SIX MONTHS ENDING JUNE 30TH, 1910.**

Name.	Ore Treated.	Gold Recovered.	Value.	Yield per Ton, in Shillings.
	Tons cwt. qrs.	Ozs. dwts. grs.	£ s. d.	
Mt. Torrens Government Battery	116 10 0	89 2 6	356 8 10	61/-
Glenloth " "	110 0 0	99 18 16	350 4 11	64/-
Petersburg " "	66 15 0	32 1 7	119 5 6	36/-
Tareoola " "	160 15 0	460 7 17	993 0 1	123/-
Tareoola Blocks Co.	1,020 0 0	1,828 10 0	4,570 0 0	89/-
Wheal Ellen Battery	274 0 0	66 15 0	208 0 0	15/-
Total	1,748 0 0	2,576 14 22	6,596 19 4	75/-

ARLTUNGA GOVERNMENT BATTERY AND CYANIDE PLANT.

White Range, Excelsior	8 12 0	11 0 17	38 3 6	79/-
" Luce's	18 5 0	26 19 4	99 7 2	109/-
" "	12 8 0	35 8 4	128 16 4	206/-
" "	8 10 0	14 0 6	53 6 4	125/-
" Extended	23 8 0	46 16 20	178 0 11	151/-
" Luce's	7 17 0	7 3 5	27 2 2	70/-
" "	16 15 0	19 16 8	75 9 9	90/-
" Extended	10 17 0	14 3 20	52 7 6	97/-
" Luce's	6 12 0	9 19 10	37 9 1	115/-
Valentine	18 5 0	5 2 0	14 17 6	16/-
White Range, Excelsior	8 3 0	6 5 12	23 10 9	57/-
" Extended	4 0 0	6 2 4	22 8 0	112/-
" "	17 7 0	31 11 7	117 0 8	135/-
" Luce's	18 8 0	54 12 8	199 11 5	215/-
" "	4 0 0	3 7 12	12 15 2	64/-
" "	6 19 0	19 9 17	69 10 2	199/-
" Excelsior	7 8 0	6 0 22	22 5 3	60/-
" Luce's	6 6 0	8 4 0	31 0 6	98/-
" "	7 4 0	12 0 18	45 15 6	127/-
" Excelsior	4 4 0	4 0 19	14 19 10	70/-
" Luce's	13 10 0	13 6 0	49 3 1	73/-
" "	14 15 1	31 11 13	112 19 11	153/-
" Extended	5 10 0	3 0 8	10 18 10	40/-
" Luce's	11 2 0	20 14 2	72 17 2	131/-
" Extended	8 0 0	4 3 16	15 6 6	38/-
" Luce's	15 3 0	20 14 12	70 16 6	93/-
Wheal Fortune	3 12 0	10 3 8	38 8 10	200/-
White Range, Associated	5 6 0	5 2 12	19 5 11	73/-
" "	4 0 0	8 7 13	31 8 0	157/-
" Luce's	5 10 0	11 14 10	44 11 7	162/-
" "	6 7 0	6 16 3	26 2 4	83/-
" "	6 0 0	5 2 20	19 2 11	63/-
" Excelsior	3 18 0	2 6 20	8 9 8	43/-
" "	21 15 0	15 3 14	55 4 7	50/-
" Luce's	9 0 0	9 13 6	36 15 3	81/-
Total	348 16 1	510 5 10	1,875 9 0	107/-
Grand total since starting of battery to June 30th, 1910	10,691 1 0	13,387 8 15	49,585 2 4	93/-

WINNECKE'S DEPOT GOVERNMENT BATTERY.

Total since starting of battery to June 30th, 1910	345 7 0	177 17 23	667 9 6	38/-
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ENCOURAGEMENT OF MINING.

STATEMENT OF SUBSIDIES PAID FROM COMMENCEMENT TO
JUNE 30TH, 1910.

Name of Company or Person to whom Subsidy Granted.	Locality.	Amount Advanced.			Amount Repaid.		
		£	s.	d.	£	s.	d.
Adelaide Crushing, Grinding, and Amalgamating Mill Co.	—	100	0	0	—	—	—
Algebuckina Gold Mining Syndicate	Algebuckina	52	10	11	52	10	11
Alma Extended Gold Mining Co.	Waukaringa	3,000	0	0	22	5	0
Backhouse, T. S.	Worturpa	100	0	0	—	—	—
Barossa Enterprise Gold Mining Coy.	Barossa, Hundred of ..	232	2	6	—	—	—
Bevilaqua & Angel	Palmer (near)	57	18	0	—	—	—
Bird-in-Hand Gold Mining Co., Ltd.	Woodside	3,000	0	0	—	—	—
Blackfellow's Creek Gold Mining Co., Ltd. .	Kuitpo, Hundred of ..	660	6	7	35	0	0
Callington Copper Mining Co.	Callington	148	8	7	—	—	—
Cockburn Copper Mining Co., N.L.	Mutooroo	273	18	5	—	—	—
Commonwealth Silver-lead Co., Ltd.	Strathalbyn, Hund. of	750	0	0	—	—	—
Copper Hill Mining Co., N.L.	Kadina	391	15	0	—	—	—
Countess of Jersey Gold Mining Co., N.L. .	Wadnaminga	321	0	0	—	—	—
Currency Creek Copper Mining Co.	Currency Creek	28	6	5	—	—	—
Crystal Gold Mining Co.	Echunga	563	17	6	176	7	6
Ding Dong Copper Mining Syndicate	Kanmantoo, Hund. of	89	9	8	—	—	—
Duke of Cornwall Gold Mining Syndicate ..	Mount Pleasant	458	17	4	43	10	0
Eagle Silver Mining Co., Ltd.	Glen Osmond	500	0	0	—	—	—
Echunga Proprietary Hydraulic Gold Sluicing Co., N.L.	Echunga	500	0	0	20	0	0
Ediacara Consols Silver Mining Co., N.L. .	Ediacara	651	12	1	375	17	0
Enterprise Copper Mining Co., N.L.	Barossa, Hundred of ..	150	0	0	9	16	0
Enterprise Excelsior (Barossa Amalgamated)	"	2,000	0	0	—	—	—
Eureka Gold Mining Co., Ltd.	Woodside	1,500	0	0	—	—	—
Fifth Creek Central Silver and Copper Mining Co., N.L.	Fifth Creek	253	2	4	—	—	—
Fortress Hill Mining Syndicate	Fortress Hill	60	0	0	—	—	—
Glenloth Mining, Battery, & Options Co., N.L.	Glenloth	515	4	7	515	4	7
Glenloth Wells Pioneer Blocks Co., Ltd.	"	100	0	0	22	18	5
Gumeracha Gold Mining Syndicate	Gumeracha	75	0	0	—	—	—
Golden Point Claims ..	Wonna	50	0	0	—	—	—
Great Ironclad Gold Mining Co.	Teetulpa	218	6	9	—	—	—
Hakendorf, C. H., and Williams, J. (Glenmarkie Mine)	Glenloth	200	0	0	—	—	—
Hamley C opper Mining Co.	Wallaroo	1,000	0	0	—	—	—
Heithersay, J., Mt. Grainger Medora Mines	Mount Grainger	77	7	7	—	—	—
Homeward Bound and Klondyke Gold Mines, N.L.	Mannahill	117	10	0	—	—	—
Hunter Bros. (Lady Millicent Mine)	Mochatoona	100	0	4	—	—	—
Ireby Gold Mining Syndicate	Mount Grainger	35	4	3	—	—	—
Kirkeek's Treasure Gold Mining Co.	Waukaringa	691	8	1	—	—	—
King's Bluff G.M. Co., N.L.	Olary	200	0	0	—	—	—
Kobinoor Gold Mining Co., N.L.	Kangaroo Island	137	17	0	—	—	—
Kobinoor Mine (H. G. Taylor)	"	162	3	0	—	—	—
Lady Alice Gold Mining Co.	Barossa, Hundred of ..	1,797	2	3	—	—	—
Lady Franklin Syndicate	Port Lincoln	2	0	0	49	0	0
Leigh's Creek South Coal Mining Co., N.L.	Leigh's Creek	95	16	4	95	16	4
McMurtie's Claims	Kuitpo, Hundred of ..	199	19	11	—	—	—
Medora and Grainger Gold Mines Syn., N.L.	Mount Grainger	344	2	2	—	—	—
Mingary Gold Mining Co.	New Luxemburg	650	0	0	—	—	—
Mount Victoria Mine	Bimbawrie	50	0	0	—	—	—
Mount Malvern Silver Mining Co.	Blackwood	491	3	6	—	—	—
Mount Malvern Silver-lead Mining Co., N.L.	Clarendon	1,347	15	3	—	—	—
Mount Pangæus Gold Mining Co.	Hahndorf (near)	56	1	4	—	—	—
Mount Monster Gold Mining Syndicate	Kuitpo, Hundred of ..	350	0	0	1	0	0
Mt. Grainger Ironclad Gold Mining Syn., Ltd.	Mount Grainger	21	18	10	—	—	—
Mount Torrens Gold Mining Co.	Mount Torrens	1,000	0	0	—	—	—
Musgrave Ranges Prospecting Association ..	Musgrave Ranges	47	2	0	—	—	—
Mount Painter Corundum and Gem Syndicate	Mount Painter	25	0	0	—	—	—
Morning Star Gold Mining Co.	Teetulpa	500	0	0	—	—	—
Mutooroo Copper and Silver Mining Co., Ltd.	Mutooroo	100	0	0	500	0	0

ENCOURAGEMENT OF MINING.—STATEMENT OF SUBSIDIES PAID—continued.

Name of Company or Person to whom Subsidy Granted.	Locality.	Amount Advanced.	Amount Repaid.
		£ s. d.	£ s. d.
Nackara Proprietary Copper Mining Co., N.L.	Nackara	68 4 6	—
New Banksia Gold Mining Syndicate	Nairne	250 0 0	—
New Alma and Victoria Gold Mining Co., Ltd.	Waukaringa	3,000 0 0	3,000 0 0
New Ajax Consolidated Gold Mining Co., N.L.	"	750 0 0	—
New Era Gold Mining Co., Ltd.	Woodside	1,000 0 0	—
New Glenloth Battery and Mining Co., L.N.	Glenloth	163 8 9	—
New Mount Grainger Gold Mines, N.L.	Mount Grainger	393 7 1	220 0 0
Northern Mining and Smelting Co., N.L.	Mount Fitton	350 0 0	—
North Nairne Gold Mining Co.	Nairne	500 0 0	—
North-West and West Australian Pros. Co.	North-west of S.A.	104 9 7	—
North-West Prospecting Association, N.L.	Tarcoola	150 0 0	—
Nil Desperandum Teetulpa Devt. Co., N.L.	Teetulpa	64 14 4	20 5 6
Nilpena Copper Mining Co., Ltd.	Blinman	290 5 3	—
Onkaparinga Dredging and Mining Co.	Biggs' Flat	146 3 3	—
Paul's Consolidated Copper Propy., N.L.	Burr Well	525 0 0	—
Paringa Mining Syndicate	Callington	399 16 8	244 0 0
Paringa and West Kanmantoo Consolidated Copper Mine, N.L.	"	1,144 3 4	—
Pioneer Gold and Copper Mining Syndicate	"	95 15 6	—
Polmear, W. J. L.	Kadina	800 0 0	—
Parara Mining Co., N.L.	Maitland	571 3 6	—
Queen Bee Mining Co., N.L.	New Luxemburg	250 0 0	250 0 0
Quorn Manganese and Silver Mining Co.	Quorn	10 9 10	—
Royal Charlie Gold Mining Co.	Mannahill	153 18 5	—
Rees, R., Ajax Mine	Waukaringa	500 0 0	—
Stainbank, A. T.	Fifth Creek	70 14 11	—
Sliding Rock Copper Proprietary, N.L.	Sliding Rock	2,000 0 0	5 12 0
Tarcoola Blocks Gold Mining Co., Ltd.	Tarcoola	3,995 5 2	—
Tarcoola Enterprise Gold Mining Co., N.L.	"	100 0 0	19 10 4
Tarcoola Proprietary Gold Mines, N.L.	"	150 4 4	9 15 0
Teatree Gully Gold Mining and Pros. Assn.	Teatree Gully	234 5 7	—
Teetulpa Mining and Crushing Co.	Teetulpa	349 11 4	—
Teetulpa Prospecting Syndicate	"	49 15 6	—
Teetulpa Prospecting Association	"	14 7 3	—
Tumby Bay Copper Mining Co., N.L.	Hutchison, Hund. of ..	22 6 1	—
Victoria Hill Amalgamated Gold Mining Syn.	Barossa, Hundred of ..	38 12 6	—
Victoria Tower Mining Co., N.L.	Mannahill	345 18 9	90 0 0
Warrakimbo Propy. Copper Mining Synd.	Barndioota, Hundred of	220 16 2	—
Warra Warra Propy. Copper Mines, N.L.	Farina	322 4 11	322 4 11
Watt's Gully Gold Mining Co.	Gumeracha	50 0 0	—
Watt's Gully Reef Claims	"	50 0 0	—
Wolters, F. C., & Co.	Echunga	25 0 0	—
Walleroo Central Mining Co., N.L.	Kadina	500 0 0	—
Westward Ho Mine (Dr. H. Dixon)	Mannahill	1,000 0 0	—
Wohler, H., & Co.	Myponga	20 0 0	—
Wheal Turner Copper Mining Co., Ltd.	Prospecting on proposed line to Queensl'd Border	1,000 0 0	—
Winnininnie Gold & Silver Propy. Co., N.L.	Winnininnie	86 3 6	—
Woodside Boring and Mining Syndicate	Woodside	422 17 11	—
Worturpa Exploration and Mining Co., Ltd.	Worturpa	800 0 0	—
Yelta New Copper Mining Co., N.L.	Walleroo	1,000 0 0	—
Totals	—	£51,448 12 5	6,091 13 6

ASSAYS AT SCHOOL OF MINES.

NUMBER OF ASSAYS MADE FOR PUBLIC PURPOSES AT THE SCHOOL OF MINES
ASSAY DEPARTMENT DURING THE SIX MONTHS ENDED JUNE 30TH, 1910.

1910.

	January	February.	March. .	April.	May.	June.
Assays for Warden of Goldfields ..	35	14	73	—	28	7
Assays for Government Geologist ..	—	2	6	—	5	—
Free public assays	48	94	84	74	85	105
Totals	83	110	163	74	118	112

DECENNIAL RETURN SHOWING OUTPUT AND VALUE OF VARIOUS METALS
AND MINERALS PRODUCED IN SOUTH AUSTRALIA SO FAR AS CAN BE
ASCERTAINED.

Year.	GOLD.		SILVER.		SILVER LEAD ORE.		COPPER.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Ounces.	£	Ounces.	£	Tons.	£	Cwts.	£
1900	3,721	14,494	—	—	—	17,526	97,727	371,920
1901	4,918	16,613	—	—	1,410	11,357	131,719	463,606
1902	7,231	24,878	—	—	2,680	19,740	136,937	388,162
1903	8,650	28,650	7,086	804	211	1,267	129,812	417,116
1904	17,897	76,025	—	—	—	—	123,560	382,356
1905	10,983	45,853	—	—	—	—	130,959	426,511
1906	8,037	27,000	801	104	—	—	164,160	718,609
1907	5,609	20,540	5,845	780	1,000	11,000	158,620	690,000
1908	2,908	12,300	—	—	900	9,000	112,554	338,000
1909	7,111	30,206	1,660	167	70	416	113,940	331,584
Totals....	—	296,559	—	—	—	70,306	—	4,535,864

Year.	COPPER ORE AND REGULS.		LEAD.		IRONSTONE FLUX.		LIMESTONE FLUX.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Cwts.	£	Tons.	£	Tons.	£
1900	2,367	22,526	7,650	4,382	—	—	—	—
1901	1,866	23,011	1,360	722	—	—	—	—
1902	2,579	42,550	43,537	22,303	—	—	—	—
1903	7,069	54,922	14,408	8,799	84,932	46,712	—	—
1904	3,051	24,597	—	—	46,687	27,091	43,440	6,516
1905	2,563	28,434	1,040	369	84,483	48,577	44,498	4,791
1906	—	—	1,000	550	75,226	33,852	31,940	4,791
1907	—	—	—	—	84,600	38,100	31,100	5,800
1908	—	—	—	—	88,000	39,600	29,500	6,000
1909	1,230	4,003	140	90	16,120	8,296	13,763	2,464
Totals	—	200,043	—	37,215	—	242,228	—	30,362

Year.	PHOSPHATE ROCK.		CRUDE SALT.		OTHER METALS AND MINERALS.	Total Value.
	Quantity.	Value.	Quantity.	Value.	Value.	
	Tons.	£	Tons.	£	£	£
1900	—	—	—	—	411	431,259
1901	—	—	—	—	2,219	522,478
1902	—	—	—	—	742	498,375
1903	1,000	1,000	40,000	12,000	100	571,371
1904	3,000	3,000	40,000	12,000	193	531,783
1905	5,000	5,000	32,500	13,000	1,261	573,796
1906	5,850	5,850	55,000	27,500	2,209	820,465
1907	8,000	8,000	75,000	37,500	2,500	814,220
1908	11,000	11,000	75,000	37,500	4,500	457,900
1909	3,772	3,697	51,407	25,594	3,873	413,390
Totals	—	37,547	—	165,094	18,013	5,635,037

Reports forming Addenda to the Record of Mines.

By Mr. H. JONES, Inspector of Mines.

BELALIE COPPER MINE.—This property is situated near Bundaleer Station. The present company commenced operations on the mine in September of last year, and since then over £1,000 has been expended in developmental work. The principal work carried on during that period consisted chiefly of crosscutting the country from the lowest point on the side of the hill, with a view of proving the N. lode and draining the waters from the workings on the S. lode down to that level. At a point 226ft. in No. 2 tunnel a crosscut was started, with a bearing direct for the vertical shaft. This has been extended 313ft., and at that point it holed through into the shaft 100ft. vertical from the surface. At 270ft. from the starting point in the crosscut the N. lode was intersected, and is from 2ft. to 2½ft. wide, and consists chiefly of quartz, calcite, and micaceous iron, with traces of copper. The lode is well defined and strong, and is well worth being further proved by driving on its course both ways. The principal work done on the S. lode was carried on from No. 1 adit at a depth of 36ft. from the surface on the underlay of the lode and about 30ft. vertical. A considerable amount of driving and stoping has been carried on at this level, and from the bottom of the drive a winze has been sunk to a depth of 100ft., or a total depth of 156ft. from the surface. At the time of my visit the winze was clear of water for a depth of 77ft., and the lode all the way down is well defined, being from 9in. to 3ft. wide, and consists of quartz and calcite containing veins and pockets of carbonates, changing into sulphide near the bottom of the winze. The vertical shaft on the property, which was recently intersected in the new workings at 100ft. from the surface, was sunk by the previous company to a depth of 150ft., but, owing to an obstruction in the shaft, and the water being up to the 120ft. level at the time of my visit, the bottom workings could not be inspected. Judging from information gathered, in the higher levels it appears that a crosscut has been driven S. from the bottom of the shaft to intersect the winze sunk on the south lode, and some driving E. done in the formation from that point.

South Lode and Future Workings.—This lode from the surface to as far down as it could be examined at the time (120ft.) is well defined, and appears to be highly promising, and warrants being further developed. The best and cheapest way to do this at present, in my opinion, would be to clean out and repair the vertical shaft from the level of the tunnel to the bottom—a depth of about 50ft.—and operate on the ore body at that level to fully ascertain its extent and value; and, if satisfactory results are obtained and the lode proves payable, then the present tunnel could be extended to intersect the ore body at the 100ft. level, so that the ore from that part of the workings could be trucked out direct through the tunnel, thus saving the expense of hauling it up the shaft.

North Lode.—This lode can be very conveniently proved and operated on by driving E. and W. on its course, and should be started at the point of intersection in the new crosscut. This would prove the value and the extent of the ore body, and make about 100ft. of backs available for stoping. Seven samples of the lode material taken at various depths were assayed at the School of Mines, Adelaide, and gave the following results:—

No. 1.	South lode,	12in. wide,	E. side of winze,	133ft. level,	18·8 ⁰ / ₀	copper,	trace gold.
No. 2.	“	“	10in. “	W. “ “ “	14·6 ⁰ / ₀	“	4dwts. “
No. 3.	“	“	36in. “	W. “ “ 100ft. “	24·4 ⁰ / ₀	“	1dwt. “
No. 4.	“	“	12in. “	E. “ “ “	21·2 ⁰ / ₀	“	“
No. 5.	North “	“	30in. “	W. “ tunnel, “	“	“	trace
No. 6.	“	“	24in. “	E. “ “ “	“	“	“
No. 7.	“	“	6in. vein,	W. “ “ “	“	“	“

This mine was originally known as the Wheal Sarah, and afterwards as the Bundaleer Mine.

BLACK EAGLE COPPER MINE (Mineral Claim 7043).—This property is situated one mile S.E. of Ediacara Mine. The principal work in progress on the mine at present consists chiefly of driving from No. 2 adit N. on what appears to be the footwall portion of the formation, which, in the face, shows high value in copper. The formation operated on appears to be an extensive one, and drives at various points have been put in E. and W. for a distance of 100ft., and N. and S. for 140ft. In all these workings the ore-bearing material consists chiefly of iron oxide, impregnated with boulders and veins of high-grade ore. Eighty-three (83) tons of 13 per cent. copper ore have been sent to market from the various workings, with about 300 tons of second-class ore stacked on the surface, valued at from 5 per cent. to 6 per cent. The ore on this mine is highly favorable for treatment by the cementation process, and I think an ample supply of water could be obtained for that purpose by sinking a shaft to a depth of 100ft. at the foot of the hill near the present workings, and then all the lower-grade ore could be treated on the property, and should pay well.

CALCOOKRA COPPER MINE.—Situated in the hundred of Hawker, 18 miles W. from Franklin Harbor, and comprised of two 40-acre claims, Nos. 6985 and 6986. The principal workings are situated on the side of a gentle slope about 40ft. vertical above the bed of the creek, and consist of two shafts—one vertical and the other on the underlay of the lode—sunk to a depth of 49ft. and 47ft. respectively. In the working carried on from the underlay shaft, lode material is disclosed bearing N.E. and S.W., underlaying S.E. at an angle of 50°. At the bottom of the underlay shaft driving on the course of the lode N.E. for a distance of 33ft. has been carried on. Owing to the drive having from 5ft. to 6ft. of water in it at the time of my inspection, I could not examine the ore body at the bottom. In the roof of the drive the formation is 3ft. wide, and consists chiefly of ferruginous quartz and decomposed slates, containing veins and nodules of green and blue carbonates, from 8in. to 12in. wide near the hanging-wall. The drive opposite to the last one has been carried in S.W. for a distance of 16ft. The formation for the length driven on gradually became smaller, and in the face of the drive is only 3in. wide, consisting of decomposed material carrying a little copper. The two walls are well defined, being from 3in. to 4in. apart, and it is quite possible that other shoots of ore will be met with along the line of lode equal in size and value to the one already operated on in the present workings. At the 21ft. level the S.W. drive has been carried in a distance of 17ft. For the first 10ft. in the drive the vein of ore is 6in. wide, containing chiefly malachite and azurite, and for the last 7ft. of driving the formation is only 3in. wide, consisting of soft material carrying green and blue carbonates between two well-defined walls. The N.E. drive at the 21ft. level has been carried in a distance of 32ft., and at this point it connects with the vertical shaft. A fair amount of stoping has been carried on at this level, both over the drive and underfoot, and, judging from the old workings, the ore body operated on appears to have been from 3ft. to 4ft. wide in places. From the various levels and stopes in the underlay shaft, 30 tons of 15 per cent. to 19 per cent. ore have been obtained. The vertical shaft, situated $\frac{1}{2}$ chain N.E. of the underlay, is 7ft. x 5ft. in the clear, and is securely timbered and sunk to a depth of 47ft. This is a good shaft, but was started on the wrong side of the lode (being sunk in the footwall country), and it will only be a waste of money to sink it any farther. About 7 chains S.W. of the main workings on the brow of the hill 100ft. above the gully a vertical shaft has been sunk to a depth of 80ft. from the bottom of the shaft, 185ft. of driving has been done in various directions, but nothing of any value has been met with in the drives. In the face of the S.W. drive, 82ft. from the shaft, a large ferruginous formation was intersected, but it contained nothing of value. One chain S.W. of the last workings a considerable amount of costean work has been done to a depth of from

3ft. to 6ft. From one of these workings, at a depth of 5ft., about 5cwts. of copper ore was obtained, which apparently was only a small pocket, and did not continue down. For about 9 chains on the surface along the outcrop stains of copper are visible at various points, but as far as can be judged from the present workings and surface indications the main shoot of ore is in the vicinity of the underlay shaft, and has been proved in the workings to be from 40ft. to 45ft. long, and from 6in. to 18in. wide. It appears to be fairly promising, and likely to continue down, and may, when developed at a greater depth, prove longer and more extensive along the line. To further prove it a vertical shaft should be sunk $1\frac{1}{2}$ chains S.E. of the underlay to intersect the ore body at about 100ft. or more, to test its value and extent at that level. Samples were taken from various levels and assayed at the School of Mines, Adelaide, and gave the following results:—No. 1, from S.W. drive, 43ft. level, lode 18in., 3.1 per cent. copper; No. 2, N.E. drive, 7 per cent. copper and 2ozs. 4dwts. silver; No. 3, S.W. drive, 21ft. level, lode 12in., 13.3 per cent. copper and 10ozs. 10dwts. silver; No. 4, N.E. drive, 11.5 per cent. copper and 4ozs. 16dwts. silver; No. 5, face, S.W. drive, lode 3in., 3.5 per cent. copper; No. 6, ferruginous lode, 60ft. shaft, lode 36in., nil; No. 7, ore said to come from bottom of underlay shaft, surface dump, gave 21 per cent. copper, 19ozs. 16dwts. silver.

EDIACARA SILVER-LEAD MINE.—The work at the mine is carried on by a party of tributers. Stopping operations are in progress N. of the main underlay shaft, and the formation operated on is 2ft. wide, containing both silver-lead ore and copper. It appears to be highly encouraging, and likely to give fairly good returns. At present there are four men employed in stopping and doing preparatory work with the view of carrying on operations on a more extensive scale. From the water shaft, situated S. of the main workings, 147ft. of the 12in. water column have been taken out and forwarded to the Wandilta Copper Mine. The small pump left in the shaft had a trial run after the removal of the other, and everything worked first class.

LEIGH'S CREEK COAL MINE.—The winding engine and Cornish boiler at the mine are in good order, but before the boiler could be made use of a new iron stack 2ft. in diameter will have to be procured for it, the old stack completely oxidised and fallen to pieces. The poppet heads over the working shaft are in a bad state, and will require a considerable amount of repairing work done on it to make it safe for hauling and landing the materials from the mine. The whole of the landing brace, 20ft. above the surface, will require new decking, and two back stays 40ft. long fixed to the poppet heads. After the timber and all necessary materials required for the above-mentioned work has been landed at the mine, all necessary repairs to poppet heads and surface plant could be completed in from three to four weeks, and everything put in working order to commence hauling coal from the 300ft. level.

Description of Present Workings.—The main shaft, 6ft. by 11ft. in the clear, is sunk vertically to a depth of 300ft., being closely timbered with sawn gum timber from surface to bottom, and is divided into three compartments, viz., hauling chamber 4ft. by 6ft., ladder way 3ft. by 6ft. (both of these chambers are the main air-intake or downcast shafts), and the third chamber 4ft. by 6ft. is the main return airway, or upcast shaft. At the bottom of the shaft a level plat has been made, 12ft. to 13ft. wide and 7ft. high, and for a length of 120ft., thus giving sufficient room to lay down two or three tram roads. A plat with these conveniences near the shaft is absolutely necessary to facilitate the working of a coal mine on anything like an extensive scale. From the end of the plat, 120ft. in from the shaft, driving has been carried down on the dip of the coal bed, 1 in 4, to a depth, I was informed, of 300ft., off which a number of headings and working places have been opened out and extended a considerable distance both E. and W. at various levels. It is fully

10 years since operations were carried on in these lower workings, all of which are now filled with water to within a few feet of the plat. As these lower workings could not be examined, their condition and the quality of the coal could not be determined. The direction of the main heading to the dip is S. 20° W., and nearly in a direct line with the deep bore, where the seam of coal was proved to be 48ft. thick, and of better quality than that operated on at the 300ft. level. From all the information I could get *re* the deepest workings, it appears that the coal seam was getting harder and of better quality going down.

Workings above Water Level.—At a point 80ft. in from the shaft two parallel headings have been driven both E. and W. for a distance of 200ft. each way—one the intake, and the other the return airway—which are connected with the upcast shaft. The coal seam for the first 100ft. each way in the vicinity of the main shaft has been left intact for protection to keep the shaft in good order. From that point the mine has been opened out on the pillar and stall system. The working rooms, or stalls, are from 8ft. to 15ft. wide, and 7ft. to 9ft. high, with pillars left between each working place of from 30ft. to 36ft., according to the nature of the ground. There are eight stalls at this level that could be put in order to produce from 40 to 50 tons of coal per day in two weeks' time, and, as the E. and W. drives are extended, more working places would be available. The output then, if necessary, could be increased 100 tons per day or more. The coal at this level is of an inferior quality, and on exposure to the atmosphere it becomes very friable; but, from information given to me, it has been used for stationary engines and domestic purposes with a fair amount of success. It would take about three months to unwater the lower levels and put them in good order, and the following plant would have to be procured and erected:—One Worthington pump, air compressor and receiver of sufficient capacity to work the pump, and air winch to haul up the coal from the dip to the plat at the shaft; 600ft. of 4in. water piping; and 600ft. of 2in. piping to carry the air down the shaft to work the pump; one Cornish boiler, and 20 half-ton mining trucks. The supply of water for the boilers and workmen will have to be brought by train from Leigh's Creek, as there is none on the mine fit for that purpose. Tanks of a sufficient capacity to hold one or two weeks' supply of water will have to be erected near the railway line opposite the mine. When the above-mentioned plant is erected and everything in working order, there should be no difficulty in bringing the output of the mine up to 200 or 300 tons of coal per day in a comparatively short time.

MILTALIE COPPER AND SILVER-LEAD MINE.—Situated 17 miles N.W. from Franklin Harbor. For the last 12 months this mine has been lying idle, and the water has risen in the workings to within 65ft. of the surface. Prior to that, mining operations had been carried on intermittently for a number of years, and a considerable amount of good developmental work has been done on the property. The principal workings are situated on the top of a small hill, 50ft. to 60ft. above the plain, and consist chiefly of three shafts sunk to the depths of 45ft., 70ft., and 130ft. Numbers 1 and 2 shafts are 35ft. apart, both sunk partly vertical, and partly on the underlay of the lode, and are connected by drives and winzes at 45ft. and 70ft. levels. From the 70ft. level stoping operations have been carried on over the drives S.W. of No. 1 shaft, to a length of 50ft., and, judging from the amount of work done, a great quantity of ore must have been obtained. The formations disclosed in the various workings are well defined, bearing N. 20° E., and dipping W. at an angle of 50°, and consist chiefly of quartz, quartzite, and gossan, from 3ft. to 5ft. wide, carrying both copper and silver-lead ore, but chiefly malachite, azurite, and galena, which occur in seams and pockets. The richest vein appears to be near the hanging-wall, and is from 6in. to 18in. wide. At the extreme S.W. end of the stopes the formation has been displaced on a vertical fault in the country, bearing at right angles to the trend of the latter. Comparatively no work has been done above the water level on the S.W. side of the fault to find

the continuation of the ore body in that direction. The main vertical shaft is situated about 80ft. S.W. of No. 1 shaft, and is 7ft. by 3½ft. in the clear, being securely timbered, and sunk to a depth of 130ft. It is also equipped with poppet heads, winding engine (10-h.p.), one Cornish boiler 12ft. by 6ft., and 6in. Cornish lift. This shaft was started apparently with a view of intersecting the lode at between 150ft. and 160ft., but, owing to the last company running short of funds, operations at the mine were suspended before the sinking was carried to that level. Judging from what can be seen in the upper workings, the lode appears likely to continue down, and warrants the further sinking of the main shaft so as to prove the ore body at a greater depth. Samples of the lode material were assayed at the School of Mines, and gave the following results :—No. 1, hanging-wall, vein 2ft. wide, 65ft. level, 2.9% copper, 12dwts. silver, 34.1% lead; No. 2, footwall, vein 20in., 2ft. wide, 65ft. level, 3.8% lead; No. 3, hanging-wall, vein 21in. wide, 45ft. level, 21.6% copper, 1oz. 16dwts. silver; No. 4, footwall, vein 21in. wide, 45ft. level, 1oz. 2dwts. silver, 40% lead; No. 5, ore dump, 6.7% copper, 2oz. silver, 39.9% lead.

MOUNT MILLAR SILVER-LEAD MINE—Situated on section 157, hundred of Hawker, 16½ miles W. from Franklin Harbor. The principal workings are situated on a hill 100ft. above the gully, and consist of a few shallow prospecting pits, and one underlay shaft sunk to a depth of 35ft. No work appears to have been done at the mine for some considerable time, and the top of the shaft has partly fallen in, and was unsafe at the time of my visit, and could not be made use of for inspecting the ore body at the bottom workings. From what information could be gathered by examination near the surface and along the shallow pits, the formation traversing the block appears to be fairly defined, bearing N.E. and S.W., with an underlie N.W. at an angle of 70°, and consists chiefly of decomposed schist, containing isolated veins and nodules of galena for a width of from 1ft. to 2ft. The lode formation disclosed in the present limited workings and the ore obtained is highly encouraging, and warrants further developmental work so as to prove its extent along the line and to a greater depth. A sample taken from surface dump, which I was told was the last stuff hauled from the bottom workings, gave 69 per cent. lead and 16dwts. silver, and one taken from 1 ton of dressed ore gave 77.4 per cent. lead and 14dwts. silver, and another taken of the decomposed material comprising the formation gave nil.

ONKAPARINGA DREDGING AND MINING COMPANY'S PROPERTY.—Since my previous visit to this property the work of dredging and sluicing has been vigorously carried on with results that should be considered fairly satisfactory, as operations had to be commenced on the outer edge of the alluvial deposit to prevent portions of the richer ground from being covered by waste or debris. The third cleaning up will probably take place during the ensuing month, and, from appearances, there should be an improvement in the gold contents per yard; and, judging from the workings, which are being extended into deeper and what has proved to be richer ground, that improvement should continue as the work progresses. The face at present discloses a large body of gold-bearing drift or gravel, which can, after the next removal of the plant, be more economically worked, and should give better returns. The work done and machinery erected up to the present are of a very satisfactory character, and show an honest endeavor to thoroughly explore and test the property.

UNION CONSOLIDATED SMELTING AND MINING COMPANY, YUDNAMUTANA.—Since my last visit to the mine the large excavation for the foundations of the plant has been completed, and an enormous amount of necessary developmental work has been carried on at various points on the holdings to prove the extent and value of the large ore bodies traversing the properties. An up-to-date smelting plant has been erected, comprising a water-jacket furnace of 100 tons capacity in 24

hours, large ore bins, blower, rolls, rock-breaker, horizontal engine (25-h.p.), with two Cornish boilers to supply same with steam, and also an assay plant, office, and a large storeroom. The whole of the plant has been substantially housed in and electric light carried to all parts of the various buildings, and everything is very convenient to carry on smelting operations at the least possible expense. Probably the amount of money expended up to date on the various workings and plant will amount to fully £20,000, all of which appears to me to have been judiciously and carefully spent on absolutely necessary work, which will be of great advantage in carrying on future operations.

No. 1 Workings.—These are situated a few hundred yards from the furnace. The shaft sunk on the “Yuda” lode at that point has been equipped with a 12-h.p. oil engine and pumping plant, with pipe main from the shaft to three large water tanks of 12,000galls. each, erected on the side of the hill, about 50ft. above the floor of the furnace. From the above tank the water runs through pipes by gravitation to the furnace and all parts of the plant. Near the boilers, and a little above their top level, a 10,000-gall. tank has been erected to keep a good supply of boiler water.

No. 2 Workings.—These are situated about $\frac{1}{2}$ mile west from the smelting plant. A large ferruginous formation is disclosed in the open-cut workings, being from 10ft. to 20ft. wide, all impregnated with carbonates and specks of copper sulphide. It contains in bulk from 4 per cent. to 6 per cent. copper, and a little gold. This kind of ore will make excellent flux. This formation is well defined, and can be traced up the hill for fully 150ft. above the gully, and can be worked for years to advantage on the open-cut system.

No. 3 Workings.—These are situated about 1 mile N. from the plant. A fairly-defined lode traverses this block, on which a considerable amount of work was carried on at one time to a depth of about 100ft., and from which a great quantity of high-grade ore was obtained. Recently the main vertical shaft was equipped with a winding engine, vertical boiler, and steam pump, with 2in. delivery. The pump has been fixed in the shaft, 20ft. up from the bottom, and is found to be of quite sufficient power to cope with the amount of water making at the present depth. The old shaft has been made larger, and sunk to a depth of 160ft. At that level a plat has been cut out and a start made to crosscut for the lode to intersect it in the sulphide zone; and, if the ore body continues down in the same angle as in the higher level, it should be met with within a few feet of the present face.

No. 6 Workings.—These workings are situated at Lyndhurst, about 4 miles E. from the plant. A considerable amount of developmental work has been done on this block, at a point from 100ft. to 150ft. above the gully, by open-cut and bench workings. The ore body disclosed bears N. and S., and consists of kaolin, quartz, and decomposed slates, impregnated with green carbonates, with seams of grey ore and red oxide for a width of from 50ft. to 100ft., and the length has been proved in the various workings to be over 1,400ft. Two hundred tons of ore from these workings, sent away for treatment as it came out of the face, gave a return of 7 per cent. copper, and the dressed parcels from 25 per cent. to 30 per cent. There is a great quantity of ore stacked on the surface at this time ready for carting away, and all the working faces are in proper working order, so that men can be started at any time when necessary, and an enormous quantity of ore could be quarried out cheaply for a number of years. At the foot of the hill a main shaft (10ft. by 4ft. in the clear) has been started and sunk to a depth of 60ft. This shaft, when equipped with a winding plant, should be continued down to a depth of at least 200ft., and crosscut the country at that level to intersect the lode, where it is quite possible that good sulphide ore will be met with, and a great height of backs made available for stopping operations.

No. 9 Workings.—These works are situated about 100yds. from the smelter. A large ferruginous lode formation traverses this block, carrying nodules and seams

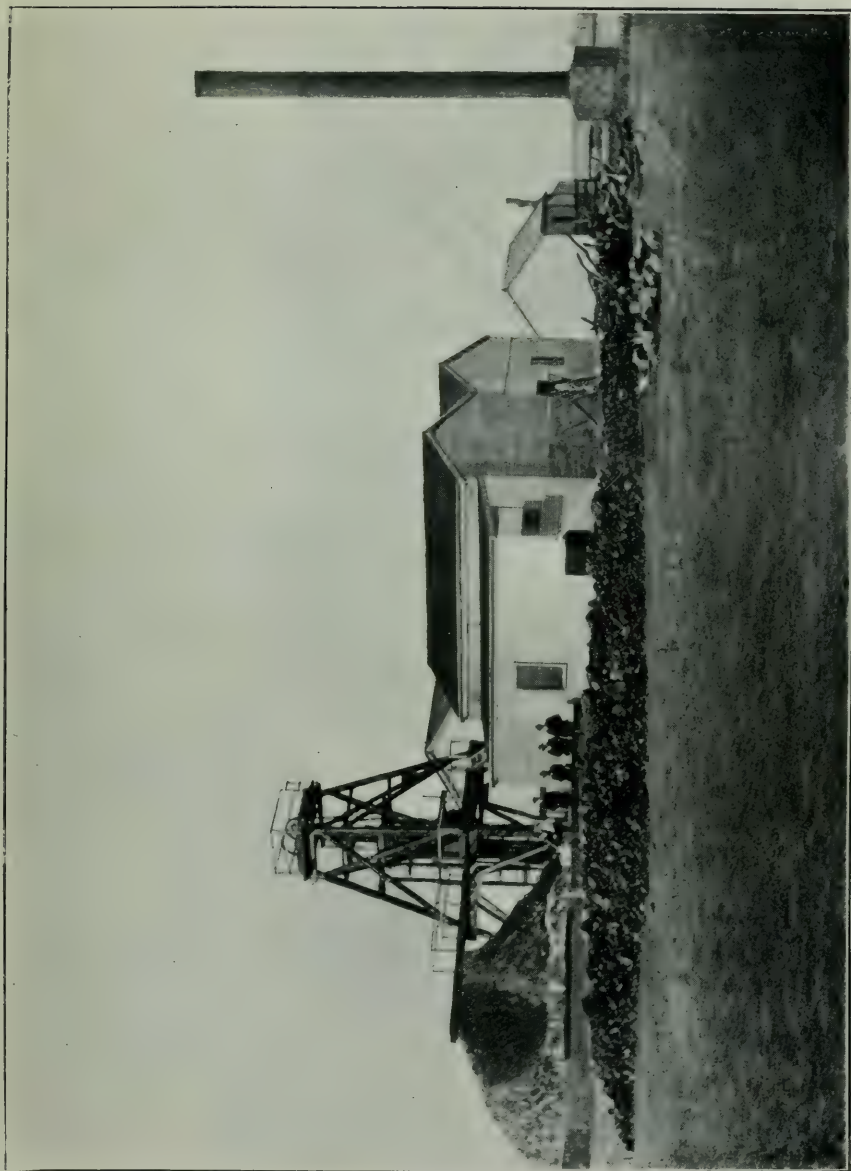
of carbonates. A vertical shaft has been sunk to a depth of 120ft., and the ore body disclosed at that level both in the N. and S. workings is of great width, with no defined walls, and appears to be of low-grade bulk, and the formation is much disturbed by faults. Probably, when the shaft is continued down to a greater depth through the faulty country, the ore body will be found to be more defined and compact. The shaft is equipped with 6½-h.p. winding oil engine.

No. 8 Workings.—These are situated about 6 miles E. from Yuda. The ore body traversing this lease is from 25ft. to 30ft. wide, and consists of kaolinised material containing seams and bunches of grey ore, ruby oxide, azurite, and carbonates. A considerable amount of work has been done on this lode near the brow of the hill, from 300ft. to 400ft. above the gully. The works consist of adits and open cuts, from which a great quantity of high grade ore has been extracted and sent to market. To facilitate the working and handling of this ore body, the present company started a tunnel from the side of the hill 30ft. up from the gully. The tunnel is 7ft. high and 5ft. wide, and has been extended into the hill for a distance of 200ft. Judging by the angle of the lode in the old workings, it should be met with within a short distance from the present face. When the lode is intersected and opened out by drives on its course there will be fully 250ft. of backs to operate on, and the ore from the workings can be trucked out through the tunnel direct into the ore bins and carted to the smelting plant. There are many hundreds of tons of from 6 per cent. to 10 per cent. ore stacked on the surface at this mine, ready to send to the smelter as soon as it commences.

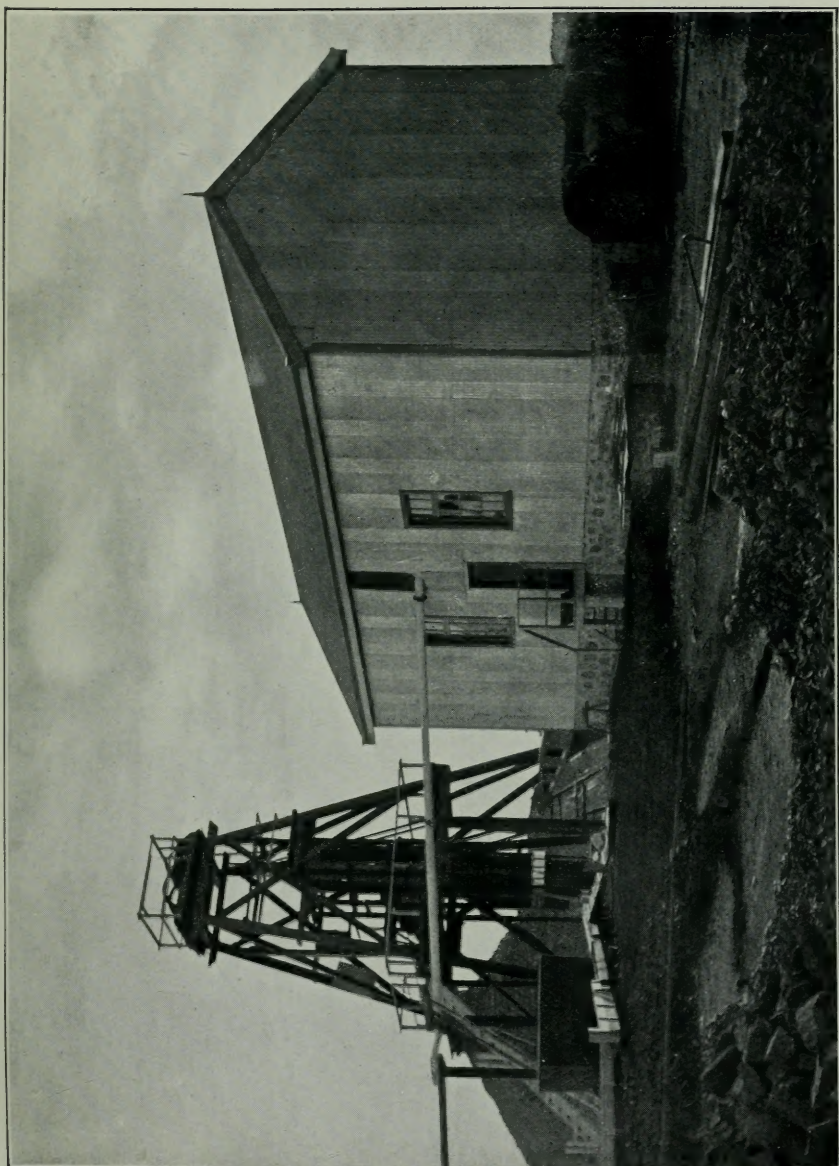
No. 10 Workings.—These are situated about 2 miles E. of the smelter. There appears to be two large ferruginous ore bodies traversing this block, containing carbonates, grey ore, red oxide, and a considerable amount of work has been done on the property to shallow levels, from which a great quantity of ore was obtained. The vertical shaft on the lease has been carried down to a depth of 160ft., and at the 150ft. level crosscutting is in progress—both N. and S.—to intersect the ore bodies. The S. crosscut is in a total distance of 80ft., and the N. one 35ft. When these drives intersect the lodes there will be a large quantity of ore available for stoping. The water is making into the present workings at the rate of 500galls. per hour. This mine is equipped with a 6½-h.p. oil winding engine, with clutch gear. This engine is the first of its kind to be erected in the North for hauling purposes, and appears to be doing excellent work, and not so expensive to run as steam power.

Considering the large ore bodies disclosed in the various workings on the company's holdings—all within reasonable distance of the plant—and an inexhaustible supply of water, the future prospects of these properties are highly encouraging, and when some cheaper method of conveying coke from the railway to the mine is adopted there will be a reasonable chance of the venture proving to be highly payable. At present there are in all about 50 men employed by the company, and once the smelting operations are commenced the number of men employed will be considerably increased.

YALPOODNIE COPPER AND LEAD MINE.—This mine is situated on block No. 416, in the township of Fern, 16 miles W. from Franklin Harbor. Two shafts have been sunk on the block to a depth of 30ft. and 120ft. respectively. A fairly-defined, large lode formation is disclosed in the shallow workings and the underlay shaft, bearing N. and S., dipping W., and consists chiefly of ferruginous quartz from 4ft. to 6ft. wide, carrying green and blue carbonates and isolated patches of galena. There has been no work done on the property for the last three years, and one of the party working the mine at that time informed me that the last parcel of 3½ tons of dressed ore sent away gave 21 per cent. copper and 14 per cent. lead. The lode exposed in the various workings is of low grade, but probably pockets of rich ore will be found in it in places. A sample taken from dumps of ore on surface gave 1.6 per cent. copper.



WANDILTA MINE.



WANDILTA MINE.

